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FINAL ENVIRONMENTAL ASSESSMENT

BLUE RIDGE MOUNTAIN ELECTRIC MEMBERSHIP CORPORATION PROPOSED SUBSTATION

Chatuge Reservoir
Towns County, Georgia

PREPARED BY:
TENNESSEE VALLEY AUTHORITY

MARCH 2009

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The Proposed Decision and Need

Blue Ridge Mountain Electric Membership Corporation (BRMEMC) is planning to construct a new electrical substation in Hiawassee, Towns County, Georgia. BRMEMC is experiencing increased demands for electric power on its existing transmission line (TL) system. Currently, BRMEMC operates one other substation, Woodsgrove, in the Hiawassee area. The Woodsgrove Substation serves 8,328 customers and has been operating above firm capacity since February 2004.

The firm capacity of the Woodsgrove Substation is 20 megawatts (MW) and maximum capacity is 40 MW. On January 3, 2008, the electrical load reached 32.4 MW. BRMEMC anticipates an estimated 5.4 percent yearly increase in electric demand. With the planned annual increases and seasonal or peak increases in electric demand, BRMEMC anticipates that the demands will exceed the TL system's capacity in June 2009 (Attachment A). Electric transmission system operators have as a goal not exceeding the firm capacity of infrastructure, including substations. This is the level reflecting the ability to withstand the loss of one substation transformer and still meet the demand on the substation. Maximum capacity is the demand that can be met by a substation with all of its transformers operating. At maximum capacity, there is no operating margin and the loss of a single transformer potentially means service disruptions and possible physical impacts to the other transformers. Without additional substation capacity, reliability of electric power in the cities of Hiawassee and Young Harris and the Towns County, Georgia, area will be increasingly at risk. TVA independently reviewed the relevant data and concurs with this conclusion.

In March 2008, BRMEMC requested that the Tennessee Valley Authority (TVA) sell via public auction approximately 1.4 acres of TVA Tract XCHR-12R (also known as Parcel 52) on Chatuge Reservoir in accordance with Section 31 of the *TVA Act of 1933*, as amended. This property would be used as the site for the construction of the new substation. BRMEMC also requested that TVA grant a permanent easement of approximately 0.2 acre for the construction of a new 69-kilovolt (kV) TL (Figure 1) to connect the substation to its transmission system. TVA would convey this permanent easement to the successful bidder at the public auction of the 1.4-acre portion of Parcel 52. In addition, TVA is considering approval under Section 26a of the *TVA Act of 1933*, as amended, for fill material that would be placed within the floodplain because of the substation construction.

In this environmental assessment (EA), TVA examines the potential impacts of selling at public auction approximately 1.4 acres of property, of granting the successful bidder a permanent easement and approval of a Section 26a permit, and of the resulting construction and operation of the substation and new TL.

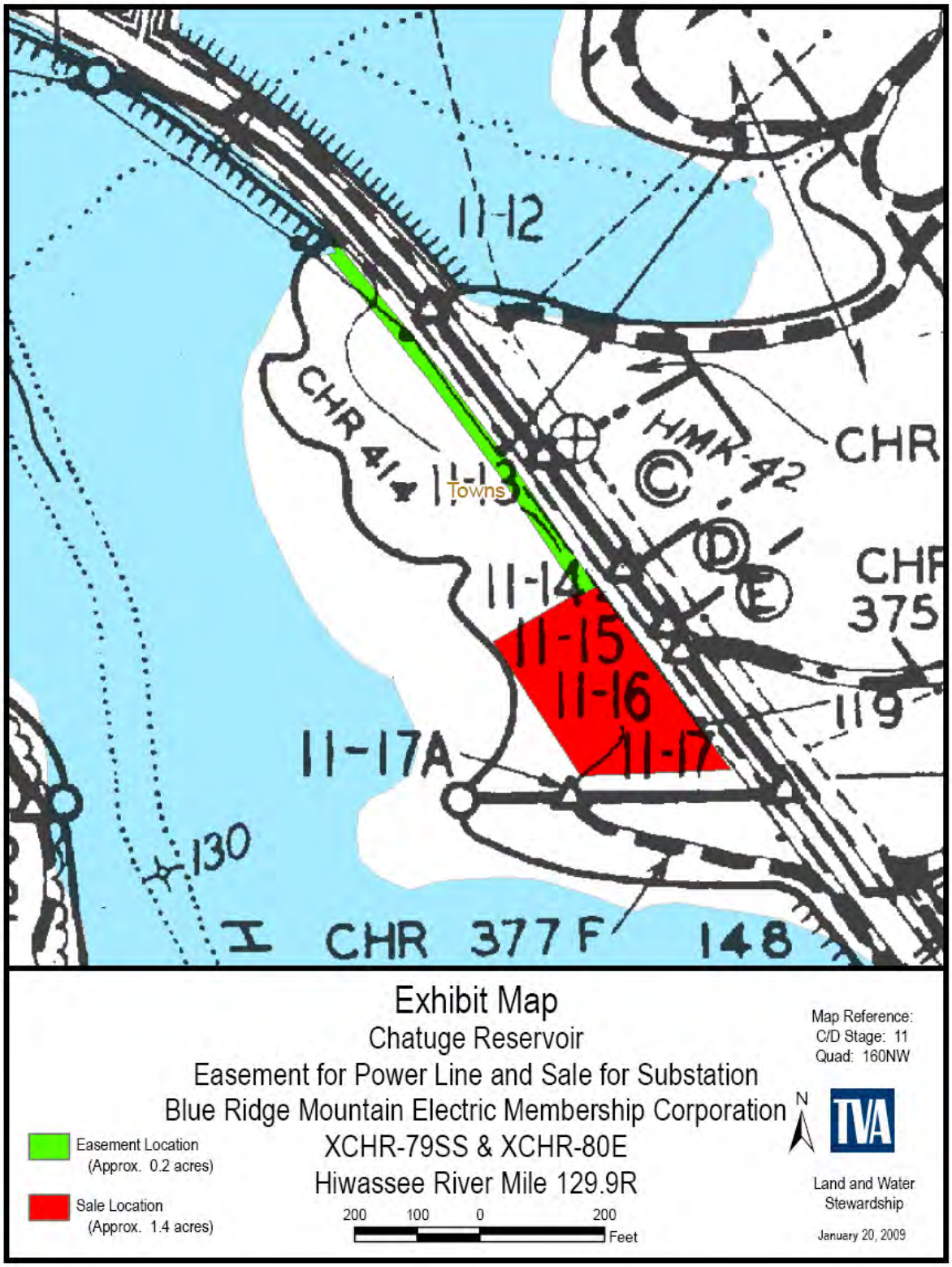

Figure 1. Proposed Easement and Sale Exhibit Map

If BRMEMC is the successful bidder, it also plans to upgrade an existing TL to accommodate higher voltage lines from its planned substation. Although the plans for the TL upgrade have not been finalized, the cumulative impacts of the upgraded TL are addressed in the Cumulative Impacts section of the EA based on the information available at this time. Based on the limited current information, it is unclear whether TVA approval will be necessary for the TL upgrade. If TVA later determines that the upgraded TL would require Section 26a and/or land use approvals, TVA would review, as appropriate, at that time the impacts of the portion of the line for which its approval is necessary.

Other Pertinent Environmental Reviews

TVA is developing a Mountain Reservoirs Land Management Plan (Plan) to guide land use and resource management decisions concerning TVA-managed public lands located along nine mountain reservoirs: Apalachia, Blue Ridge, Chatuge, Fontana, Hiwassee, Nottely, Ocoee 1 (Parksville), Ocoee 2, and Ocoee 3. In the planning process, TVA will identify the most suitable and appropriate use for each parcel of TVA-managed public land along these reservoirs for the next 10 years. The anticipated effects of implementing the Plan were described in a draft environmental impact statement (EIS), which was released for public comment in August 2008 (TVA 2008).

A public scoping comment period for the Plan was conducted from June 1 through June 30, 2007. Comments received on the land management planning process and on the environmental issues to be addressed in the associated EIS were summarized in a report published in September 2007. During the public scoping comment period, BRMEMC, the City of Hiawassee, the Georgia Department of Natural Resources (GADNR), and Towns County submitted comments to TVA regarding the use of Parcel 52. BRMEMC requested that a portion of this parcel be made available for a new substation. The City of Hiawassee requested use of this parcel as a city park. GADNR suggested that this parcel be designated for deepwater boat access. Towns County requested the use of this parcel, along with two other parcels, as a developed recreation area.

Necessary Permits and Public Involvement

BRMEMC has requested in fee approximately 1.4 acres of TVA property. To accommodate this request, TVA would declare this property surplus and conduct a Section 31 public auction. Additionally, a permanent easement has been requested by BRMEMC for approximately 0.2 acre of TVA property. The permanent easement would allow for the construction of a new TL. TVA would grant the easement to the successful bidder at the public auction for the 1.4-acre portion of Parcel 52. Approval under Section 26a of the *TVA Act of 1933,* as amended, is required for the construction of any obstructions across, along, or in the Tennessee River or its tributaries. Section 26a approval would be necessary for the placement of fill material within the floodplain. BRMEMC's application and supporting materials are located in Attachment A.

Before beginning construction, the successful bidder, whether BRMEMC or another entity, may also be required to obtain other local and/or state permits or licenses. If the substation construction exceeds 1 acre, the successful bidder would be required to obtain a storm water construction permit from the State of Georgia. In addition, TVA would require the successful bidder to provide a copy of its Spill Prevention, Control, and Countermeasure Plan prior to beginning construction.

The proposed action was the subject of a public notice issued by TVA on April 29, 2008, seeking scoping comments during a 30-day public comment period. A copy of the public notice is located in Attachment B. The public notice was placed on the TVA Web site on April 29, 2008. The public notice was also published in the *Hiawassee Towns Herald* and the *Hiawassee Towns Sentinel* newspapers on May 1, 2008. TVA received public comments pertaining to the BRMEMC proposal from 12 stakeholders and one county commissioner. Towns County Homeowners Association (TCHA) submitted two letters on May 31, 2008, with the following subjects and dates: "Comments in response to the TVA notification about BRMEMC application for 2 Acre tract," dated May 31, 2008, and "Development of Enforcement Procedures for Watercraft Usage on Lake Chatuge," dated March 24, 2008. The comment dated March 24, 2008, was originally submitted as a comment to the Plan. This latter comment is being addressed in the EIS for the Plan. The BRMEMC proposal does not include the use of watercraft.

The scoping comments pertaining to the BRMEMC proposal were used to identify potential impacts. Comments submitted during this comment period included concerns regarding electric and magnetic fields (EMFs), floodplains, land use, recreation, socioeconomics, and visual resources. Most comments pertained to either land use or visual resources. All public scoping comments pertaining to the BRMEMC proposal and TVA's responses are located in Attachment B.

The draft Plan and EIS were released for public comment on August 15, 2008. Stakeholders could provide comments via TVA's Web site, e-mail, and telephone. In addition, an open house-style public meeting for the draft Plan and EIS was held on August 27, 2008, at the Blairsville Campus of North Georgia Technical College. Stakeholders could provide written comments during the public meeting. As of September 29, 2008, a total of 128 stakeholders commenting on the draft Plan and EIS had provided comments pertaining to the BRMEMC proposal, and these comments were used to identify potential impacts associated with the substation. The comments were very similar to, and highlighted many of the same potential impacts as, those comments received during the BRMEMC public scoping comment period. A transcribed version of these comments is located in Attachment C.

TVA released the draft EA associated with the BRMEMC proposal for public comment on October 22, 2008. Postcards were mailed to 167 individuals to notify them of the draft EA public comment period. Stakeholders could provide comments via TVA's Web site, e-mail, telephone, and at an open house-style public meeting. TVA issued public notices announcing the availability of the draft EA for review and the open house-style public meeting at Towns County High School in Hiawassee, Georgia, which was held November 13, 2008 (see TVA's notice regarding this meeting in Attachment D). The notices appeared in the *Hiawassee Towns County Sentinel* and *Hiawassee Towns County Herald* on October 23 and 30, and November 6 and 13, 2008. During the open house-style public meeting, 113 people registered in attendance, and 47 comments were submitted. The public comment period officially closed on November 24, 2008, and TVA received a total of 58 comments.

Comments received during the BRMEMC draft EA public comment period included concerns regarding EMFs, floodplains, land use, recreation, security, socioeconomics, visual impacts, and water quality. TCHA submitted comments that included those previously listed, along with the quality of the *National Environmental Policy Act* (NEPA) review, public participation, project description, need for the substation, and alternative

locations. A transcribed version of these comments and TVA's responses are located in Attachment D.

During the numerous public comment periods, various petitions were submitted to TVA pertaining to the BRMEMC proposal and the draft Plan. Most of the petitions were either titled "Petition to Leave Parcel 52 in 'Recreational' Status" or "Mountain Reservoirs Land Management Plan – We urge TVA to protect, in their present state, Parcels #10, #77 and #52 on Chatuge Reservoir, and not grant development." TVA received 592 signatures on the various petitions in opposition to the BRMEMC proposal.

The proposed action was reviewed by the State of Georgia, pursuant to Executive Order (EO) 12372 on Intergovernmental Review of Federal Programs. The comments submitted by the State of Georgia are located in Attachment E. The State of Georgia concluded, "This proposal has been found to be consistent with those state or regional goals, policies, plans, fiscal resources, criteria for Developments of Regional Impact (DRI), environmental impacts, federal executive orders, acts and/or rules and regulations with which the state is concerned."

BRMEMC initiated a public input process to inform stakeholders of the need to construct a new substation and upgrade TLs. The BRMEMC public input process began after TVA's public scoping comment period ended. TVA continued to receive and evaluate additional comments received as a result of the BRMEMC public input process. TVA has concluded that no new issues have been raised by the BRMEMC public input process.

This EA contains responses to the substantive comments TVA received during scoping and the public review of the draft EA. Comments about BRMEMC's proposal that TVA received on the draft EIS for the Mountain Reservoirs Land Management Plan, which are included in the EA, have not been separately responded to. TVA has considered these comments and has determined that they are encompassed by the comments on the scope of EA and on the draft EA, for which responses are provided, or are addressed by analyses in the EA.

Substation Locations and Transmission Line Routes

Evaluation of Other Potential Locations

Prior to submitting this request to TVA, BRMEMC reviewed several other potential substation locations and TL routes in the Hiawassee area. BRMEMC completed a construction cost analysis for each alternate substation location. The cost analysis included the costs of the property, TL installation, and site preparation that consisted of grading, fence installation, and substation construction. Other evaluation criteria used by BRMEMC included engineering and construction feasibility, total length of the TL route, length of new and upgraded TL, and overall project costs. In addition, TVA used the following criteria to further evaluate the alterative substation locations and TL routes: potential environmental effects, topography, land use/land cover, the number of stream or reservoir TL crossings, and proximity to schools, residential areas, churches, and cemeteries.

Color infrared aerial photography, taken in 2002, was used to derive land use data surrounding the alternative locations (Attachment F). To determine the appropriate designation, all land use classes within a 500-foot radius of the alternative substation sites and a 500-foot buffer of the proposed TL route alternatives were analyzed. For the

identification of land use/land cover only, the 500-foot radius and the 500-foot buffer zone are further referenced as the review area.

Alternatives Considered But Not Selected by BRMEMC

BRMEMC evaluated seven alternative substation locations and three TL routes. Five possible substation sites were located on private property, and two were on TVA property (Figure 2). Sites 1, 2, 3, 4, and 7 are located on private property. Sites 5 and 6 are located on TVA property. TL Route 1 is the existing route located along U.S. Highway (US) 76. TL Routes 2 and 3 are proposed new routes. TVA has reviewed BRMEMC's evaluation and concluded that it is adequate for screening sites.

BRMEMC determined that Substation Sites 1-4, 6 and 7 and TL Routes 2 and 3 did not meet the needs of the project or would not be financially feasible. These alternative locations, briefly discussed below, were dismissed by BRMEMC before it proposed use of part of Parcel 52.

Site 1 is located approximately 1.85 miles southeast of Parcel 52 and is approximately 1.5 acres in size. The Chattahoochee National Forest is located approximately 0.5 mile northwest of this site. The land uses of Site 1 and the surrounding review area of approximately 8.5 acres were 37.5 percent forest, 33.5 percent industrial use, and 29 percent pasture. There were no schools, residential areas, churches, or hospitals within the review area of Site 1. No federally or state-listed endangered or threatened species or designated critical habitat are known within the review area. The substation would be visually similar to other industrial development seen in the landscape now but would contribute to a decline in visual integrity. Visual impacts would be reduced by providing vegetative screening around all sides of the substation. This site has a low potential for an archaeological site to be present. Recent ground disturbance and the eroded nature of the soil indicated that any potential sites would not likely be eligible for the National Register of Historic Places (NRHP). This 1.5-acre property, with minimum improvements, would meet the needs of BRMEMC. BRMEMC estimated the costs of substation site preparation to be approximately $65,000. However, substantial improvements to TLs would need to occur in order to connect to a substation at this location. Between 7.6 and 7.9 miles of TL improvements would be necessary, and those costs were estimated to be between $4.2 and $4.3 million. Because of the substantial costs associated with using this site, BRMEMC determined that Site 1 was not a financially feasible alternative location. In addition, the current property owner did not want to sell the property at the time.

Site 2 is located approximately 1.66 miles southeast of Parcel 52 and is approximately 1.5 acres in size. The land uses of Site 2 and the surrounding review area of approximately 8.5 acres were 56 percent pasture, 33 percent rangeland (shrub and brush), and 11 percent residential. There were no schools, churches, or hospitals located within the review area of Site 2. No federally or state-listed endangered or threatened species or designated critical habitat are known within the review area. The new substation would introduce a broadly horizontal and vertical industrial element, substantially contrasting with the surrounding landscape. However, due to its location off of main thoroughfares, Site 2 would have little exposure to public views. Proper siting and vegetative screening along the north, west, and south sides of the substation would reduce visual impacts. This site has a moderate potential for an archaeological site to be present. However, recent ground disturbance and the eroded nature of the soil indicated that any potential sites would not likely be eligible for the NRHP.

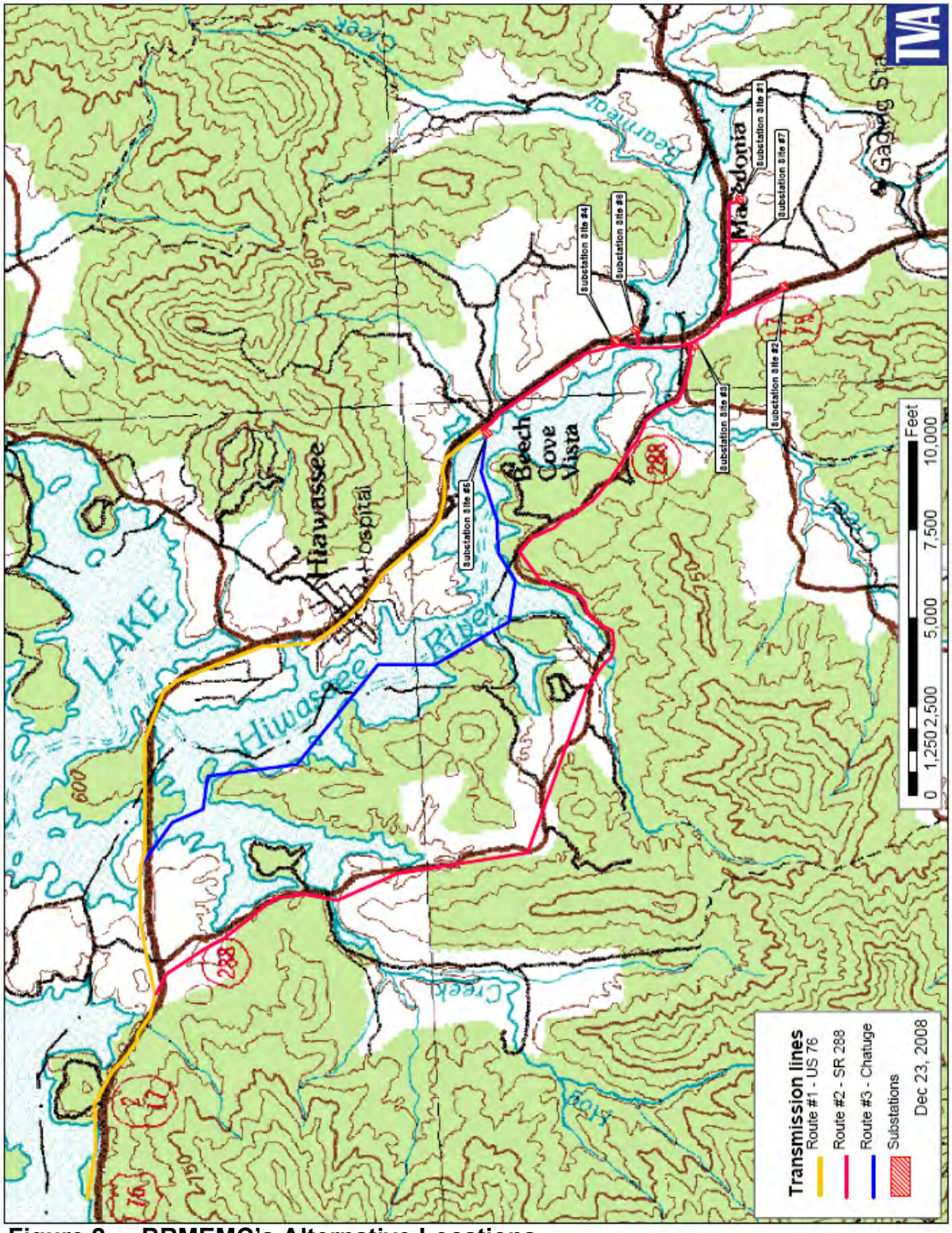

Figure 2. BRMEMC's Alternative Locations

This 1.5-acre property, with substantial improvements, would meet the needs of BRMEMC. BRMEMC estimated the costs of substation site preparation to be approximately $105,000. Additionally, between 6.9 and 7.3 miles of TL improvements would be necessary, and those costs were estimated between $3.8 and $4.0 million. Because of the need for substantial site improvement and the costs associated with selecting this site, BRMEMC determined that Site 2 was not a financially feasible alternative location. In addition, the current property owner did not want to sell the property at the time.

Site 3 is located approximately 1.09 miles southeast of Parcel 52 and is approximately 1.5 acres in size. The land uses of Site 3 and the surrounding review area of approximately 8.5 acres were 61 percent pasture, 32 percent forest, 5 percent residential, less than 1 percent water, and less than 1 percent commercial. There were no schools, churches, or hospitals located within the review area of Site 3. No federally or state-listed endangered or threatened species or designated critical habitat are known within the review area. The substation would be located in an area of open agricultural land surrounded by dense mature forest to the west. The open agricultural land has a positive visual contrast to the mature tree line seen by motorists to the east. Introducing a broadly horizontal industrial element in the landscape would likely reduce scenic class by two levels or more, the threshold of significance. However, this site has a low potential for an archaeological site to be present. As with Site 2, this 1.5-acre property would require substantial improvements to meet the needs of BRMEMC. BRMEMC estimated the costs of substation site preparation to be approximately $95,000. Additionally, between 6.3 and 7.7 miles of TL improvements would be necessary, and those costs were estimated between $3.4 and $3.6 million. The current property owner preferred not to divide the property for partial sale, and purchasing the entire tract of property was not financially feasible for BRMEMC.

Site 4 is located approximately 0.76 mile southeast of Parcel 52 and is approximately 2 acres in size. The land uses of Site 4 and the surrounding review area of approximately 8.8 acres were 76 percent pasture, 20 percent forest, 2 percent water, and 2 percent residential. There were no schools, churches, or hospitals located within the review area of Site 4. No federally or state-listed endangered or threatened species or designated critical habitat are known within the review area. With land use characteristics similar to Site 3, introducing a broadly horizontal industrial element in the landscape would likely reduce scenic class by two levels or more, the threshold of significance. However, this site has a low potential for an archaeological site to be present. BRMEMC would need to conduct extensive site preparation to construct the substation. BRMEMC estimated the costs of purchasing the 2-acre property to be approximately $600,000 and substation site preparation to be approximately $165,000. Additionally, between 6.1 and 6.9 miles of TL improvements would be necessary, and those costs were estimated between $3.3 and $3.8 million. Because of the need for extensive site preparation and the costs associated with using this site, BRMEMC determined that Site 4 was not a financially feasible alternative location.

In addition to the five alternative private property locations, BRMEMC also considered the use of two TVA properties. Site 5 is on TVA Parcel 52 and is 1.4 acres in size. Site 5 is addressed in more detail in later sections of the EA. Site 6 is on a 2-acre portion of TVA Parcel 51. In a letter dated May 30, 2007, BRMEMC stated that a portion of either Parcel 51 or 52 might be acceptable for the substation.

Site 6 on Parcel 51 is located approximately 0.82 mile southeast of Parcel 52 and is approximately 2 acres in size. The land uses of Site 6 and the surrounding review area of

approximately 7.2 acres were 70 percent forest, 23 percent water, and 7 percent pasture. There were no schools, residential areas, churches, or hospitals located within the review area of Site 6. No federally or state-listed endangered or threatened species or designated critical habitat are known within the review area. However, an emergent wetland was identified within the review area. Construction of Site 6 would result in clearing of forest for the substation footprint resulting in a negative visual change in the landscape. Recreationists on the reservoir and along the shoreline, as well as area residents and motorists, would have foreground views of new construction. Motorists traveling along US 76 from the south would have views in the middleground and foreground for long durations. The new substation would likely be a major focal point in the landscape for these motorists. There are two known archaeological sites located in close proximity to the substation footprint, but these sites have been determined to be ineligible for the NRHP in consultation with the Georgia State Historic Preservation Officer. BRMEMC would need to conduct extensive site preparation to construct the substation. BRMEMC estimated the costs of purchasing the 2-acre property to be approximately $150,000, but TVA did not conduct an appraisal for this property. BRMEMC estimated the site preparation costs to be approximately $540,000. Additionally, between 6.2 and 6.9 miles of TL improvements would be necessary, and the costs were estimated between $3.4 and $3.8 million. Because of the substantial costs associated with this site, BRMEMC determined that Parcel 51 was not a feasible alternative location.

Site 7 is located 1.66 miles southeast of Parcel 52 and is approximately 3 acres in size. The Chattahoochee National Forest is located approximately 0.5 mile northwest of this site. The land uses of Site 7 and the surrounding review area of approximately 7.1 acres were 64 percent pasture, 28 percent forest, and 8 percent residential. There were no schools, churches, or hospitals located within the review area of Site 7. No federally or state-listed endangered or threatened species or designated critical habitat are known within the review area. The new substation would add to the number of discordantly contrasting elements seen in the landscape and would likely be a focal point for area residents. Visual impacts could be reduced by providing vegetative screening around all sides of the substation. This site has a moderate potential for an archaeological site to be present. However, the eroded nature of the soil indicated that any potential sites would not likely be eligible for the NRHP. BRMEMC estimated the costs of purchasing the 3-acre property to be approximately $150,000 and site preparation to be approximately $105,000. Additionally, between 7.0 and 7.3 miles of TL improvements would be necessary, and the costs were estimated between $3.8 and $4.0 million. Because of the substantial costs associated with selecting this site, BRMEMC determined that Site 7 was not a feasible alternative location.

In addition to the two TL routes discussed below, BRMEMC also considered upgrading 4.3 miles of an existing route, TL Route 1. TL Route 1 is addressed in more detail in later sections of the EA.

TL Route 2 is 6.5 miles long and would be located along State Route (SR) 288. The land uses of TL Route 2 and the surrounding review areas were 34 percent forest, 28 percent pasture, 23 percent residential, 6 percent commercial, 5 percent water, and 1 percent rangeland. National Wetland Inventory maps indicate a forested wetland is located south of SR 288 along Woodring Branch. Industrial use, harvested forest, and quarries accounted for less than 2 percent of the land use. There were no schools or hospitals located within the review area. However, less than 1 percent of the land use was occupied by churches. Construction and operation of this TL would not have a significant impact on visual resources, but the TL would contribute to a cumulative reduction of visual harmony and

scenic integrity in the landscape. Within one-tenth of a mile of the TL, there are nine known archaeological sites, and two of the sites would occur within the TL right-of-way. These two archaeological sites have been determined to be ineligible for the NRHP. However, the potential to affect significant archaeological sites along TL Route 2 remains moderate.

TL Route 3 is 4.5 miles long and located along Chatuge Reservoir. The land uses of TL Route 3 and the surrounding review areas were 67 percent water, 14 percent forest, 12 percent residential, 6 percent pasture, and less than 1 percent commercial. There were no schools, churches, or hospitals located within the review area. The line would parallel the Hiawassee River and would likely be seen in the foreground by recreation users on the water and potentially by motorists along US 76 and SR 288. The line would cross the Chattahoochee National Forest and Towns County Park. This area of the Chattahoochee National Forest exhibits little to no human disturbance, and the construction of TL 3 would result in potentially significant impacts to national forest lands. Within one-tenth of a mile of the TL, there are five known archaeological sites, but these sites have been determined to be ineligible for the NRHP. However, the potential to affect significant archaeological sites along TL Route 3 remains high.

One federally listed and seven state-listed endangered or threatened species are known within the review areas of TL Routes 2 and 3. The federally listed endangered green pitcher plant *(Sarracenia oreophila*) occurs less than a mile from TL Routes 2 and 3. There are seven state-listed (two Georgia and five North Carolina) and a federally listed candidate aquatic species that are known to occur within the Hiawassee River watershed. These aquatic species could potentially occur within TL Route 3.

Preferred Site Identification

BRMEMC selected Site 5 on Parcel 52 as the preferred substation site because the substation would be located near existing TL routes and BRMEMC's load center. The land uses of Site 5 and the approximate 8.6-acre surrounding review area were 49 percent pasture, 20 percent residential, 13 percent water, 10 percent forest, 7 percent commercial, and less than 1 percent rangeland. There were no schools, churches, or hospitals located within the review area of Site 5. BRMEMC estimated the site preparation costs to be approximately $65,000, and TVA has established the minimum bid for the 1.4-acre property at approximately $177,257. Therefore, BRMEMC's overall costs for Site 5 would be a minimum of approximately $242,257.

Approximately 4.3 miles of improvements would be necessary for TL Route 1, 6.5 miles for TL Route 2, and 4.5 miles for TL Route 3. The costs for these improvements were estimated between $2.8 (TL Route 1) and $4.3 million (TL Route 2).

BRMEMC chose TL Route 1 as the preferred TL route location because of the route length and overall cost of TL improvements. All land use classes within 500 feet of the existing TL were analyzed. The land uses of TL Route 1 and the surrounding review areas were 40 percent commercial, 20 percent forest, 14 percent residential, 11 percent pasture, and 10 percent water. Industrial use, highways and highway and TL rights-of-way, rangeland, and cemeteries accounted for less than 5 percent of the land use. There were no schools, churches, or hospitals within the review area. TL Route 1 would involve upgrading an existing TL except for the small part on the requested easement area, and the potential impacts would be reduced compared to constructing a new TL.

TVA has determined that the evaluation criteria used in the analyses of alternatives is adequate. They compare appropriate costs and identify environmental effects that vary among alternatives. The substation location and transmission line alternative chosen by BRMEMC appear to be reasonable from a cost-comparison perspective. Site 5 avoids the potential significant visual impacts associated with some of the other evaluated sites, and none of the other sites are obviously environmentally better than Site 5.

Subsequent to issuance of the draft EA, BRMEMC worked with the TCHA in cooperation with area government officials to identify and evaluate other possible sites. TVA understands that sites identified in this effort were too small for a proposed substation or had other problems that made their use infeasible. TCHA identified two additional potential substation sites located along US 76 approximately 0.2 mile north of Site 5 (Attachment G). Both sites are located near the downtown area of Hiawassee, Georgia. TCHA Site 1, approximately an acre in size, is too small to construct the proposed substation and would not meet the needs of BRMEMC. In addition to the size restriction, TCHA Site 1 would be located adjacent to a private residence and a barn.

TCHA Site 2, approximately 2 acres in size, is currently for sale and has been marketed as a commercial property. The land uses of TCHA Site 2 and the surrounding review area of approximately 17.6 acres were approximately 40 percent commercial, 36 percent forest, 20 percent residential, and 4 percent pasture. Chatuge Regional Hospital is located within 0.3 mile from TCHA Site 2, and the Mountain Education Center High School is located within 0.5 mile from the site. TCHA Site 2 has substantial changes in elevations and has been divided into two approximately levels. Extensive grading has occurred on the upper level, and the lower level contains access along the northbound lane of US 76. Extensive site preparation of TCHA Site 2 would be required to change the elevations of the two levels into a usable area large enough to accommodate substation construction. The existing TL right-of-way is located along the southbound lane of US 76. To connect the new substation to the existing TL, BRMEMC would have to acquire additional TL right-of-way from the neighboring commercial developments. Although site-specific cost analyses were not provided to TVA, BRMEMC has determined that TCHA Site 2 was not a financially feasible alternative location.

Alternatives

In this EA, TVA examines the potential impacts of selling at public auction approximately 1.4 acres of property, granting the successful bidder a permanent easement and issuing Section 26a approval for fill, and the resulting construction and operation of the substation and new TL. In addition to the alternatives discussed above in connection with the BRMEMC siting process, the alternatives considered in this EA are the No Action Alternative and the Action Alternative.

Under the No Action Alternative, TVA would not sell at public auction the approximately 1.4 acres of land that would be used to construct a substation nor would TVA grant to the successful bidder a 0.2-acre permanent easement for the construction of a new TL. Furthermore, TVA would not approve a Section 26a permit for the placement of fill material within the floodplain. To ensure future reliability of electric power in the cities of Hiawassee and Young Harris and Towns County, BRMEMC would need to locate its planned substation and TL elsewhere. This could include one of the sites rejected by BRMEMC that are described above. As discussed, use of any of these sites would likely have similar or greater environmental impacts than Site 5.

Under the Action Alternative, TVA would sell at a Section 31 public auction the approximately 1.4 acres of land that would be used to construct a substation. TVA would also grant the successful bidder a 0.2-acre permanent easement for the construction of a new TL and would approve a Section 26a permit for the placement of fill material within the floodplain. Assuming BRMEMC is the successful bidder, upon completion of BRMEMC's construction of the substation and the TL, the ability to reliably meet the electricity needs of the cities of Hiawassee and Young Harris and Towns County would be improved.

BRMEMC's conceptual design for the 1.6 acres of TVA property includes the construction of an electric substation and new TL (Figure 3). The 1.4 acres of property needed for the substation would be sold at a Section 31 public auction. A portion of the 1.4 acres is located in the floodplain. To construct the substation properly, BRMEMC would grade the site to create a level building area. This grading would result in the placement of about 21 cubic yards of fill material within the 100-year floodplain and approximately 0.2 acre-foot of fill material within the 500-year floodplain. Additional gravel rock materials needed to form the construction pad for the substation would be obtained from a local quarry—either Harrison Quarry or Mission Vulcan Quarry. Section 26a approval would be needed for the placement of fill material within the floodplain.

BRMEMC would construct an 8-foot-high chain link fence with dark green vinyl slats around the substation. A visual buffer of mixed evergreen and deciduous trees and evergreen shrubs would be planted around the substation, and appropriate lighting would be installed.

BRMEMC has stated the substation would be locked at all times, except when employees are working inside the substation. BRMEMC would remotely monitor the substation with its Supervisory Control and Data Acquisition System, and weekly inspections would be performed.

BRMEMC's new 69-kV TL would be located on approximately 0.2 acre of TVA property. If BRMEMC is the successful bidder, TVA would grant BRMEMC a permanent easement for the construction and maintenance of the TL. The new TL would be located along adjacent BRMEMC and highway rights-of-way and follow the alignment of an existing BRMEMC 25-kV TL. The existing TL would be removed, and its wooden poles would be replaced with taller metal poles to accommodate the higher voltage lines from the new substation. The existing TL would either be recycled by BRMEMC or disposed of in a permitted landfill.

Preferred Alternative

TVA's preferred alternative is the Action Alternative. This alternative best meets the purpose and need for BRMEMC's request to TVA, securing a site for a new substation at the best cost that can be tied into its distribution system with limited impacts. TVA has considered alternative sites and has determined that they are not as feasible as Site 5 on Parcel 52. These alternative sites are more expensive, have unwilling sellers, and/or have the potential for more significant environmental impacts. None of the other identified alternatives are obviously environmentally superior to Site 5. A number of commenters were concerned about the visual impacts of locating a substation on reservoir-front property.

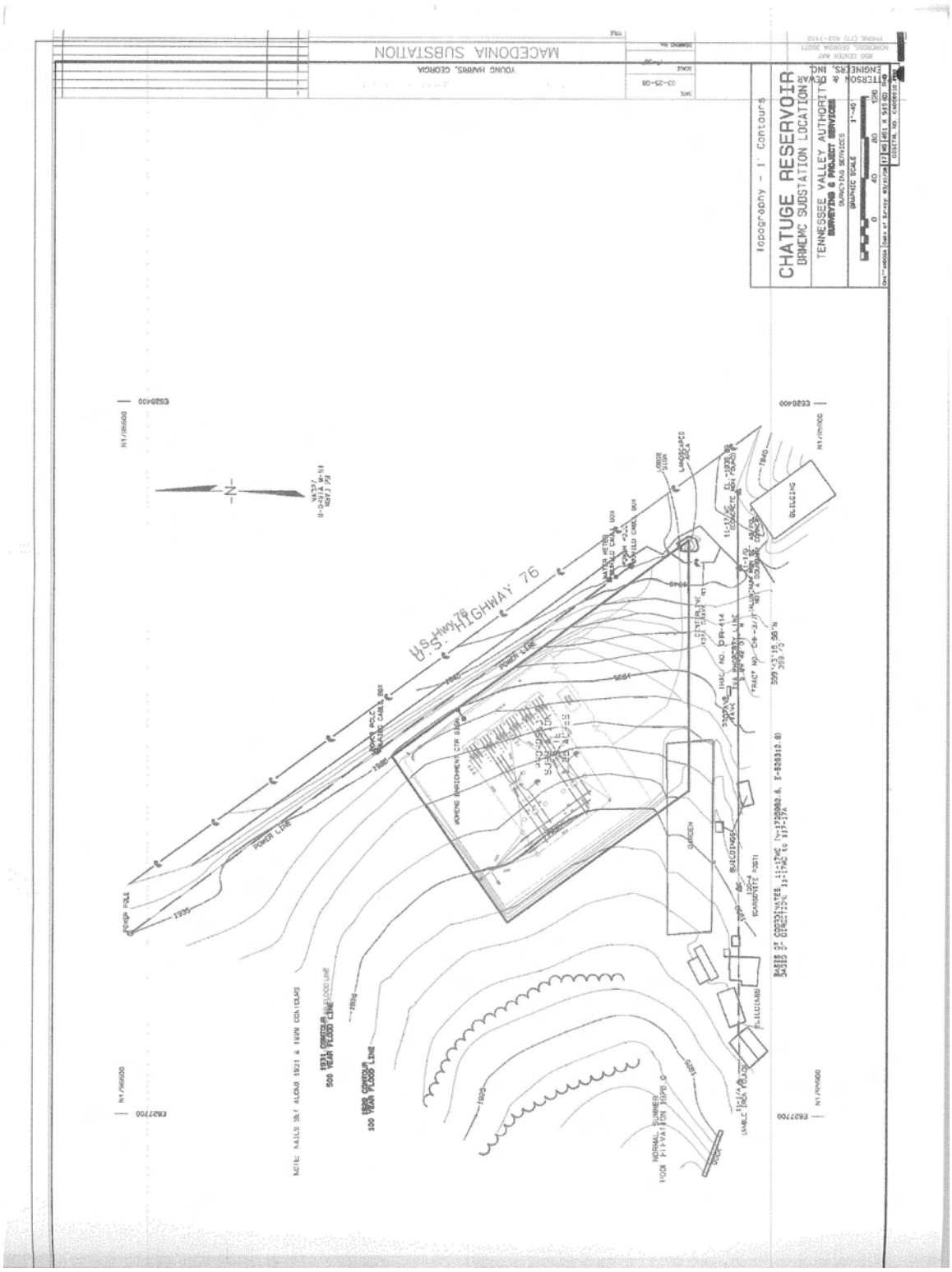

Figure 3. BRMEMC's Conceptual Design

While Parcel 52 fronts the reservoir, the location of Site 5 on the parcel is away from the water and borders US 76. The view of the substation would be obscured in whole or in part by other buildings and the required vegetation screen. Opponents of the action commented that Site 5 was undervalued by TVA and hence compares more favorably financially. In response, TVA has appraised the site assuming a developed recreation use, which is the other developmental use that could conform to TVA's Land Policy. The appraised value of Site 5 assuming a developed recreation use would range from approximately $81,000 to $243,000. TVA's valuation based on substation use falls within this range. However, when combined with the cost of upgrading the transmission line to connect the alternative sites, Site 5, as valued for substation use, is the overall lowest cost in comparison to the other alternative substation locations.

Affected Environment and Evaluation of Impacts

This property is located in Towns County, Georgia, at Hiwassee River Mile 129.9 along the right-descending bank. The physical areas addressed here include the footprints of the substation and proposed new TL route. Under the No Action Alternative, TVA would not sell at public auction the approximately 1.4 acres of land that would be used to construct a substation nor would TVA grant a 0.2-acre permanent easement for the construction of a new TL. Moreover, TVA would not approve a Section 26a permit for the placement of fill material within the floodplain. Under the Action Alternative, TVA would sell at a Section 31 public auction the approximately 1.4 acres of land that would be used to construct a substation. TVA would also grant to the successful bidder a 0.2-acre permanent easement for the construction of a new TL and would approve a Section 26a permit for the placement of fill material within the floodplain. Assuming BRMEMC is the successful bidder, upon BRMEMC's construction of the substation and the TL, the reliability of electric service to the cities of Hiawassee and Young Harris and to Towns County would be enhanced, and the risk of service disruptions would be substantially decreased.

Because of the nature of this project, TVA has determined that adoption of the Action Alternative would not result in waste stream generation or alteration involving air or solid or special wastes. Likewise, TVA has determined there would be no impacts to navigation or drinking water supply.

Construction of the substation and new TL would be an insignificant threat to groundwater assuming BRMEMC (or the successful bidder) complies with applicable requirements for the control of oil and hazardous substance spills and installs secondary containment surrounding the substation. To ensure this, TVA will expressly require such compliance as a condition of the proposed transfer of property rights. Construction of the substation and new TL would also create a transient and temporary impact on traffic. The construction traffic impacts would exist for a limited time (from March to September 2009) and would be limited to normal business hours. Therefore, the potential impacts to traffic would be minor.

Land Use

On Chatuge Reservoir, TVA initially purchased 3,557 acres of land above the normal summer operating pool. Of the acreage originally purchased, TVA has sold about 629 acres (i.e., approximately 17 percent). Most of these sale parcels are currently developed as residential areas, and a few have been developed as recreation areas. TVA transferred 1,161 acres to state or federal agencies for public use. TVA retains approximately 1,767 acres.

TVA owns approximately 52 percent of the total 128 miles of shoreline on Chatuge Reservoir. Forty-eight percent of this shoreline was never owned by TVA; TVA only purchased flowage easements along this shoreline. Approximately 57 percent of the shoreline is available for residential development, most of which is on private shoreline. TVA estimates that about 74 percent of the shoreline available for residential development is currently developed with residential subdivisions.

When purchasing and retaining flowage easement rights around reservoirs, in addition to retaining the rights to flood the property, TVA often placed a restriction within flowage easement documents to allow TVA to enter private property and remove obstructions, including habitable structures and fill material, below a certain contour that would in any way interfere with reservoir operations. This contour is most often the maximum shoreline contour (msc) of the reservoir. For Chatuge Reservoir, the msc is elevation 1,933-foot mean sea level (msl). As a result, with respect to many of the flowage easements on Chatuge, TVA has the right to remove obstructions, including structures and fill, below elevation 1,933-foot msl.

Parcel 52 (also known as TVA Tract No. XCHR-12R) is a 9.4-acre tract located in Towns County near the city of Hiawassee. About 54 percent of Towns County land is in the Chattahoochee National Forest (U.S. Forest Service 2007). In recent years, development has increased on the privately owned land in Towns County, Georgia, as well as in Clay County, North Carolina, which also surrounds Chatuge Reservoir. Land use data for Towns County (Natural Resources Spatial Analysis Laboratory 2007) show that from 1974 to 2005, high-intensity development increased from 36 to 205 acres, and low-intensity development increased from 1,332 to 6,793 acres. About 92,000 acres (approximately 85 percent) of the county remained in forest in 2005.

The land use of Parcel 52 consists primarily of an open field that is currently maintained in fescue under an agricultural license. The land use adjacent to the property includes a recreational-vehicle community directly to the south and commercial development directly across US 76 to the east. Directly across the reservoir to the west approximately 1,022 feet, the land use consists of a residential subdivision.

Under the No Action Alternative, TVA would not sell the 1.4-acre portion of Parcel 52 or grant a 0.2-acre easement for the TL. The land use would remain consistent with the remainder of the parcel. Therefore, there would be no impacts to land use. Under the Action Alternative, TVA would sell 1.4 acres at public auction for use as a substation, and TVA would provide an easement to the successful bidder over 0.2 acre for a new TL. A substation would be generally compatible with the existing land uses along the US 76 corridor in the area. Within Parcel 52 and the surrounding review area, the amount of land available for industrial land use types (which include TL rights-of-way) would be approximately 14 percent. The amount of land available for pasture would decrease to approximately 35 percent. However, implementing the Action Alternative would not have a significant impact on the land use surrounding Chatuge Reservoir.

Recreation

The construction of a substation and new TL on 1.6 acres of Parcel 52 would not conflict with the existing or future potential recreational use on the remaining approximate 8 acres of the parcel. The Mountain Reservoirs Land Management Plan (Plan) is currently under development, and various land use allocations for Parcel 52 are being considered. The purpose of the land planning process is to allocate TVA parcels to a type of land use. Currently, Parcel 52 is managed for uses consistent with Natural Resource Conservation, such as agriculture and dispersed recreational use (primarily bank fishing). Alternatively, Parcel 52 is also suitable for and capable of some Developed Recreation uses. The public had an opportunity via the draft Plan and EIS public comment period that ended October 31, 2008, to provide input to TVA as to the most appropriate land use for the remainder of Parcel 52.

If the remainder of Parcel 52 were allocated for Developed Recreation in the final Plan that will be presented to the TVA Board of Directors for approval, TVA would then be able to consider commercial or public recreational development proposals on the parcel, provided they are consistent with TVA guidelines and policy. The TVA Land Policy (TVA 2006) states that TVA leases or easements for commercial recreation purposes shall limit the use primarily to water-based recreation designed to enhance the recreation potential of the natural resources of the river and be a stimulus for regional economic development. Future requests for commercial recreational use would be evaluated by TVA using a phased-review process and would be subject to an appropriate environmental review.

Attachment H includes a summary of the methodology used by TVA with respect to our recreation analysis. A capability and suitability analysis assessed Parcel 52 for various development alternatives and determined the feasibility of the parcel to support a variety of regional development needs, including infrastructure support, within the limits of TVA's policies. The construction of the proposed substation and TL would neither preclude nor significantly affect potential recreational uses that would otherwise be considered by TVA on Parcel 52. Furthermore, there are 10 campgrounds, four commercial marinas, four public fishing piers, and three stream access sites located on Chatuge Reservoir. There are 16 recreation areas that contain at least one boat ramp, nine of which are privately operated. Five of the ramps are operated by public entities, including the ramp on the Chatuge Dam Reservation that is managed by TVA. The construction of the proposed substation and TL on a portion of Parcel 52 would not directly, indirectly, or cumulatively impact recreation on Chatuge Reservoir.

Visual Resources

Visual resources are evaluated with respect to existing landscape character, distances of available views, sensitivity of viewing points, human perceptions of landscape beauty/sense of place (scenic attractiveness), and the degree of visual unity and wholeness of the natural landscape through the course of human alteration (scenic integrity). The value class of a landscape is determined by combining the levels of scenic attractiveness, scenic integrity, and visibility. Attachment H includes a summary of the methodology used by TVA with respect to our visual resources analysis.

The proposed substation site lies on Chatuge Reservoir and near the city of Hiawassee, Georgia. The site is bordered to the north and east by US 76 and to the south and west by the remainder of Parcel 52 and Chatuge Reservoir. The topography is relatively flat and gently slopes away from the roadway toward the reservoir.

The site is visible from the highway and commercial businesses to the north and east in the foreground viewing distance (up to 0.5 mile from the observer) and from the reservoir to the southwest in the middleground viewing distance (0.5 mile to 4 miles from the observer). In the foreground and middleground distances, the site may be partially visible to a few residents to the west across Chatuge Reservoir and to campers to the south. Views for residents to the west would be less obscured by existing vegetation along the western boundary of the site during the winter following leaf drop. Views available from the background viewing distance (4 miles to the horizon) are generally not available, due to topography and vegetation. The existing scenic attractiveness is common to minimal, and the existing scenic integrity is low.

Under the No Action Alternative, TVA would not sell at public auction the requested land nor would TVA grant a permanent easement or approval of a Section 26a permit. The substation and new TL would not be constructed on TVA property, and there would be no net change in the existing scenic value.

Under the Action Alternative, TVA would sell at public auction the requested land and grant a permanent easement and approval of a Section 26a permit. The substation construction and new TL would contribute to a decline in scenic attractiveness and scenic integrity in the immediate area. The substation and new TL would be seen in the foreground by area residents and motorists along US 76, a few residents to the west across Chatuge Reservoir, and campers to the south. However, with vegetative screening and lighting mitigation measures as outlined below, the direct and indirect impacts to visual resources associated with the Action Alternative likely would not lower scenic class by two levels or more, the threshold of significance. There would be insignificant cumulative impacts to visual resources associated with the Action Alternative.

- A vegetative screen of mixed evergreen and deciduous shrub species would be planted at a 25-foot-minimum width around all sides of the substation. Shrubs would be 4.5 to 5 feet tall when planted and would have a mature height of 10 to 12 feet. The shrubs would be planted with a maximum spacing of 5 feet between each shrub. The vegetative screen must have a 100 percent survival rate for one year. The shrubs would not be planted within 20 feet of the proposed substation gates.

- An 8-foot-high chain link fence with dark green vinyl slats would be constructed around the substation.

- All substation, new TL, and associated construction lights would be fully shielded or have internal low-glare optics, such that no light would be emitted from the fixture at angles above the horizontal plane.

Floodplains

The Flood Insurance Rate Map (Figure 4) panels for the site indicate that a portion of the tract is located within the approximate 100-year floodplain (Zone A). The 100-year flood elevation at this location is 1,929.0. Based on surveyed contour data, a very small portion of the property is located within the limits of the 100-year floodplain. Construction of the substation would involve the placement of about 21 cubic yards of fill material within the 100-year floodplain to elevate the building site. The applicant evaluated alternative sites and provided documentation to support a determination of “no practicable alternative” to the proposed floodplain development.

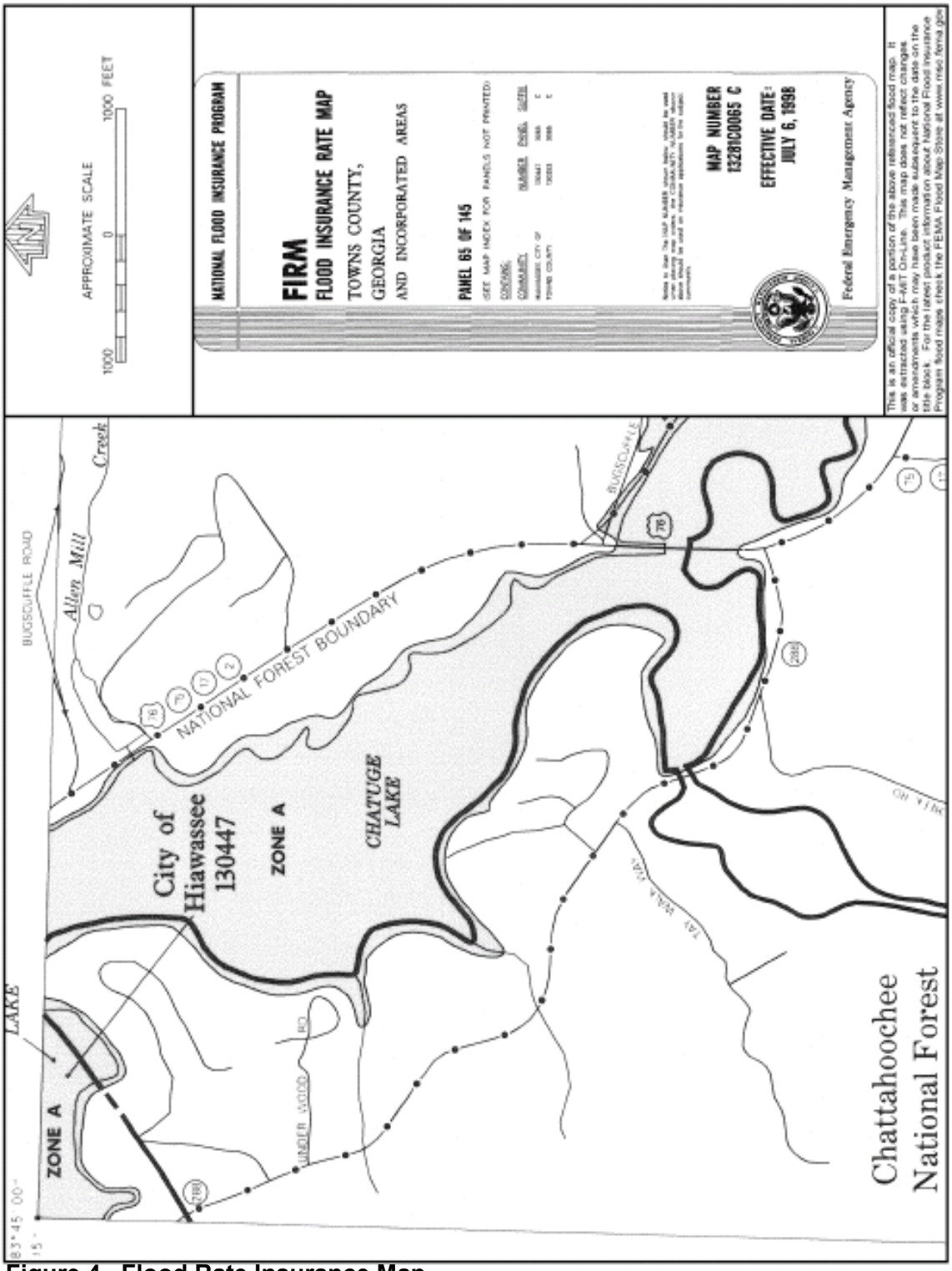

Figure 4. Flood Rate Insurance Map

To minimize adverse impacts, all portions of the substation would be constructed above elevation 1,933.0, which would be 4 feet above the 100-year flood elevation at this location. Therefore, the project would be consistent with EO 11988 for floodplain management.

About 0.2 acre-foot of fill material would be placed within the flood control storage zone in order to elevate all portions of the substation above the 500-year flood elevation 1,931.0. The applicant has provided information documenting the need for the placement of fill material. The amount of displaced flood control storage has been minimized while achieving the project objective. Therefore, the project would comply with the TVA Flood Control Storage Loss Guideline.

TVA would include the following (or a substantially similar) condition in the warranty deed, easement instrument, and/or Section 26a permit: You are advised that TVA retains the right to flood this area and that TVA will not be liable for damages resulting from flooding.

Prime Farmland

Prime farmland is defined by the U.S. Department of Agriculture as land that has the best combination of chemical and physical characteristics for meeting the nation's short- and long-range needs for food and fiber. It could be cultivated land, pastureland, or forestland, but it is not urban, built-up land, nor is it covered by water. Concern over the conversion of prime farmland to urban or industrial use prompted the passage of the 1981 *Farmland Protection Policy Act* (FPPA). This act requires that all federal agencies evaluate impacts to farmland prior to permanently converting the land to a nonagricultural land use. Form AD 1006, "Farmland Conversion Impact Rating," must be completed by federal agencies with assistance from the Natural Resources Conservation Service (NRCS) before action is taken. For the purpose of FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance.

All of the portion of Parcel 52 being requested by BRMEMC has been classified as land of statewide importance (Bradson fine sandy loam, 2 to 10 percent slopes) and is currently under an agricultural lease. This area scored 136 on Form AD 1006, less than the threshold score of 160 that indicates a potentially significant impact on prime farmland. Factors contributing to the score of 136 included the relatively small unit size, nonfarm surrounding land use, limited farm support services, and proximity of urban buildup. Therefore, adoption of the Action Alternative would result in insignificant direct, indirect, and cumulative impacts to prime farmlands.

Terrestrial Ecology

Animals: The site of the proposed sale of 1.4 acres and associated 0.2-acre easement is located on a portion of Parcel 52 that has been previously modified and consists largely of mowed grasses. The habitat on this site offers little value to wildlife. Species accustomed to human development such as European starling, rock doves, and American robin can be observed at the site; no uncommon habitat exists at the proposed substation site. Species of wildlife that favor riparian habitats, including belted kingfisher, great blue herons, and green herons, may be observed along the nearby margins of Parcel 52.

Under the No Action Alternative, the substation and new TL would not be built on Parcel 52. Therefore, there would be minor and insignificant project-related direct, indirect, and cumulative impacts to wildlife or wildlife habitat. Because the site has been previously modified and offers little wildlife habitat, the adoption of the Action Alternative would result in minor and insignificant direct, indirect, and cumulative impacts to wildlife and wildlife habitat.

Plants: Parcel 52 is a 9.4-acre tract of land on Chatuge Reservoir along US 76 south of Hiawassee, Georgia, in Towns County. Chatuge Reservoir is part of the Hiwassee River

watershed, and Parcel 52 is located in the Broad Basin portion of the Blue Ridge ecoregion (Griffith et al. 2001). The Broad Basin region, which comprises most of the lands within the reservoir, is drier and has lower elevations and less relief than the more mountainous Blue Ridge regions. The soils are mostly deep, well drained, and loamy to clayey Ultisols. This rolling foothills region is mostly forested with pastures and row crops found on terraces and floodplains. Much of the pasture and corn crops support local cattle, hog, or poultry operations (Griffith et al. 2001).

Three types of vegetation classes are found on Parcel 52. The parcel is dominated by herbaceous vegetation with a fringe of deciduous woodlands (forested wetlands) intergrading into shrublands (scrub-shrub wetlands) along the shore of Chatuge Reservoir. A grass/forbs habitat occurs primarily on approximately 90 percent of the parcel. Common weedy species found are Bermuda grass, Johnson grass, orchard grass, tall fescue, narrowleaf plantain, and various other broadleaved species. The remaining 10 percent of the vegetation on Parcel 52 is in the form of forested and scrub-shrub wetlands. River birch and silver maple are dominant tree species with black willow, silky dogwood, and buttonbush in the shrub layer. The herb layer is dominated by rushes (soft rush and path rush) and sedges (false hop sedge, Frank's sedge, and fox sedge), multiflora rose, Japanese honeysuckle, oriental bittersweet, common boneset, cut grass, and touch-me-not. Almost 100 percent of the vegetation on the 1.6-acre portion of Parcel 52 proposed for the substation and TL is comprised of the grass/forb community. There are no uncommon terrestrial plant communities, designated critical plant habitat, or otherwise noteworthy botanical areas occurring on or adjacent to Parcel 52.

Invasive exotic plant species occurring within and near the project area include Chinese privet, Japanese honeysuckle, Johnson grass, multiflora rose, oriental bittersweet, sericea lespedeza, and tree of heaven. All of these species have the potential to adversely affect the native plant communities because of their potential to spread rapidly and displace native vegetation. Essentially, the entire proposed project is on land in which the native vegetation has been extensively altered by previous land use. All of these invasive species are Rank 1 (severe threat) and are of high priority to TVA (James 2002).

Implementation of the No Action Alternative would not result in any project-related impacts to the terrestrial ecology of the region. The herbaceous and sparse woody vegetation growing along the shoreline of Chatuge Reservoir would continue to grow and be affected occasionally by stream bank erosion from water level fluctuations. However, adoption of the No Action Alternative would allow the exotic invasive species present on Parcel 52 to continue to grow and possibly spread to adjacent areas.

Under the Action Alternative, TVA would sell at public auction the requested land and grant a permanent easement and approval of a Section 26a permit. Since there are no rare terrestrial plant communities present on or adjacent to the project area, and the communities present are common and representative of the region, adoption of the proposed Action Alternative would not create adverse impacts to these resources. Therefore, implementation of the Action Alternative is expected to have insignificant direct and indirect impacts to plants. There would be no cumulative impacts to plants. If best management practices (BMPs) (Muncy 1999) for revegetation of disturbed lands are implemented in the areas surrounding the fill, no significant direct, indirect, or cumulative impacts from the proposed Action Alternative are expected. TVA's Section 26a approval would be conditioned on the use of such BMPs.

Wetlands

Forested and scrub-shrub fringed wetlands occur along the shoreline on Parcel 52 and are categorized as Category 2 wetlands of moderate quality according to TVA's Rapid Assessment Method for wetlands. This method is a version of the Ohio Rapid Assessment Method (Mack 2001) that was specifically designed for the TVA region. Black willow, silky dogwood, and buttonbush along the shoreline grade into palustrine forest dominated by river birch and silver maple. Other wetland species present include rushes (soft rush and path rush) and sedges (false hop sedge, Frank's sedge, and fox sedge), cut grass, and touch-me-not. No wetlands are present on the 1.4-acre site of the planned substation or the 0.2-acre proposed TL easement.

Under the No Action Alternative, no impacts are expected to the wetlands present on Parcel 52. The 1.4-acre substation site would not be sold, and the 0.2-acre easement would not be granted; therefore, the fringed wetlands would continue to be managed as they have been in the past.

Because no wetlands are present within the footprint of the proposed substation and TL easement, no direct, indirect, or cumulative impacts to wetlands are expected under the Action Alternative. Even though the fringe wetlands on Parcel 52 in the area of the proposed project are not considered high-functioning wetlands, they provide valuable shoreline habitat and should be maintained in their current condition.

Water Quality and Aquatic Ecology

Chatuge Reservoir is a headwater reservoir with no upstream impoundments that alter flow patterns and physical and chemical characteristics of runoff. An average annual discharge (1990 to 2005) of 439 cubic feet per second results in an average water retention time in the reservoir of about 269 days. The long retention time results in Chatuge Reservoir becoming thermally stratified in the summer. Once stratification is established, oxygen in the deeper water cannot be replenished from the air or from contact with the oxygen-rich surface water. This results in low dissolved oxygen (DO) concentrations in the lower strata of the water column as DO is depleted by the natural process of decaying organic material. As part of TVA's Lake Improvement Plan, an aerating weir was constructed in November 1992 to improve minimum flow and DO levels in the releases from the dam.

Chatuge Reservoir is located in the Blue Ridge Physiographic Province. Due to the geologic characteristics of the region, streams in the watershed have naturally low concentrations of nutrients and dissolved minerals. Consequently, the reservoir has low productivity (i.e., low chlorophyll concentrations). More than 37 percent of the watershed lies within two national forests, the Nantahala National Forest in North Carolina and Chattahoochee National Forest in Georgia, affording some protection to water quality (Hiwassee River Watershed Coalition [HRWC] Inc. 2007).

Chatuge Reservoir was monitored on a biennial cycle from 1994 through 1998. After a substantial drop in the reservoir's ecological health score in 1998, monitoring has been conducted annually. For the past nine years, Chatuge Reservoir has rated "poor" every year with the exception of 2001 when it rated "fair," primarily because of improved DO conditions and lower average chlorophyll concentrations. The lack of spring rains and near record low runoff in 2001 likely reduced the amount of nutrients and organic material brought into the reservoir. As a result, chlorophyll concentrations were lower and oxygen levels in deeper strata were higher (due to less demand to decompose organic materials).

Low flows also reduce the rate at which the colder bottom water is displaced by warmer inflows, further reducing the rate of decomposition.

Since 1998, the ratings for four reservoir indicators—DO, sediment quality, bottom life, and chlorophyll—have fluctuated, but a shift in overall reservoir scores has resulted from more frequent and concurrent low ratings for these indicators. A plan was completed in 2007 to address water quality in Chatuge Reservoir (HRWC 2007). This plan was developed by the HRWC in cooperation with TVA and other agencies. The Chatuge plan is based on modeling of the watershed and reservoir and recommends actions necessary to improve water quality to an ecological health score of "fair."

Under the No Action Alternative, TVA would not sell at public auction the requested land nor would TVA grant a permanent easement or approval of a Section 26a permit. Consequently, the substation and new TL would not be constructed on TVA property, and there would be no change in the existing aquatic ecology or water quality.

Under the Action Alternative, TVA would sell at public auction the requested land and grant a permanent easement and approval of a Section 26a permit. The proposed development of the substation and new TL as designed would not impact the existing riparian vegetation. However, the substation and new TL could increase the amount of impervious surfaces, but with the implementation of proper BMPs and Section 26a general and standard conditions, the amount of pollutants entering the reservoir would not increase. Adoption of the Action Alternative would not affect aquatic ecology.

With the implementation of TVA's Section 26a general and standard conditions (Attachment I) included within the warranty deed, the easement instrument, and/or the Section 26a permit, the direct and indirect impacts to surface water associated with the Action Alternative would be minor and temporary. There would be no cumulative impacts to surface water quality associated with the Action Alternative.

Endangered and Threatened Species and Species of Conservation Concern

Attachment H includes a summary of the methodology used by TVA with respect to our analysis of endangered and threatened species and species of conservation concern.

Aquatic Animals: The TVA Natural Heritage database indicated that no aquatic endangered or threatened species are located in the area near Parcel 52 (NatureServe 2008). Therefore, adoption of either alternative would not affect aquatic endangered or threatened animals.

Terrestrial Animals: In June 2008, the TVA Natural Heritage database indicated that no listed terrestrial animal species were reported within a 3-mile radius of the site. Bog turtles (*Glyptemys muhlenbergii*), federally listed as threatened, have been reported from a wetland approximately 11.8 miles from the site. No suitable habitat for this species occurs on the project site.

Under the No Action Alternative, the proposed substation and TL would not be built on Parcel 52. No suitable habitat for listed species occurs on Parcel 52. Adoption of the No Action Alternative would not result in direct, indirect, or cumulative impacts to listed or uncommon terrestrial wildlife species. Due to the lack of suitable habitat for listed species on or adjacent to the project site, adoption of the Action Alternative would not result in direct, indirect, or cumulative impacts to listed terrestrial animals or their habitats.

Plants: The TVA Natural Heritage database indicated there is one federally listed endangered plant (green pitcher plant, *Sarracenia oreophila*), one state-listed threatened plant (Manhart's sedge, *Carex manhartii*), and three champion tree species (black birch, red hickory, and silverbell) recorded from within 5 miles of the proposed substation site on Parcel 52. Current rankings of federally and state-listed species were verified through NatureServe Web site (NatureServe 2008). TVA biologists conducted a field survey in May 2006 and found no federally or state-listed species within the area of Parcel 52.

The green pitcher plant is a carnivorous species known from three populations (two in Clay County, North Carolina, and one in Towns County, Georgia). All are on shallow slopes, at about 1,500-1,800 feet elevation, and have a palustrine hydrology, fed by acidic seepage. These populations have been altered considerably by grazing, fire, cultivation, and drainage efforts. Currently, the Towns County site is managed by The Nature Conservancy.

Because no known populations of endangered or threatened plant species occur within the area of the substation and easement sites, no project-related impacts to listed plant species would result from adoption of the No Action Alternative. Although listed species are known to occur within 5 miles of the project area, none of these species or their habitats were observed during a field review in May 2006. Therefore, no significant direct or indirect impacts to rare plants are anticipated from the adoption of the Action Alternative. There would be no cumulative impacts associated with the Action Alternative.

In conclusion, there are no known populations or habitats to support populations of federally or state-listed plant species in the project area. There would be no impacts to listed plant species under either alternative.

Natural Areas

The town of Hiawassee is adjacent to Chattahoochee National Forest, and Parcel 52 is within 3 miles of three additional natural areas. No Nationwide Rivers Inventory streams or Wild and Scenic rivers are in the vicinity of Parcel 52. The Chattahoochee National Forest is managed by the U.S. Forest Service for water quality, forest products, and recreation. The forest is one of two national forests in Georgia; it covers approximately 750,000 acres in north Georgia. Towns County Park, managed by Towns County for public recreation, is located approximately 2.3 miles northwest of Parcel 52. Swallow Creek Wildlife Management Area, an approximately 20,000-acre tract managed by GADNR Game and Fish Division for big and small game hunting, hiking, camping, and fishing, is located approximately 2.8 miles southeast of Parcel 52. Reed Branch Wet Meadow, a 5-acre tract managed by The Nature Conservancy, is approximately 2.8 miles northwest of Parcel 52.

Under the No Action Alternative, TVA would not sell at public auction the requested land nor would TVA grant a permanent easement or approval of a Section 26a permit. No impacts to natural areas in the vicinity of Parcel 52 are anticipated as a result of the No Action Alternative.

Parcel 52 is situated in a commercialized area with existing TLs and is outside the boundary of Chattahoochee National Forest. In addition, the distance from Parcel 52 to the three additional natural areas is sufficient to avoid effect to these areas. Therefore, there would be no anticipated direct, indirect, or cumulative impacts to these natural areas resulting from adoption of the Action Alternative.

Archaeological Resources and Historic Structures

TVA contracted with TRC Inc. (TRC) to conduct an archaeological and historic structures assessment of the proposed substation site and TL easement area (Jenkins et al. 2008). TRC identified one previously recorded archaeological site within the easement area, and TRC recommended the site ineligible for the NRHP. TRC also identified 18 historic structures within a 0.5-mile radius of the substation and easement area. Seven of the historic structures are recommended ineligible for the NRHP, and the remaining 11 structures are recommended eligible for the NRHP. The visual effect to the eligible structures would not be adverse because of existing modern structures in view of the historic structures and/or vegetation screening, which protects the historic setting of the structures. TVA consulted with the Georgia State Historic Preservation Officer and the following federally recognized tribes: the Eastern Band of Cherokee Indians, the United Keetoowah Band of Cherokee Indians in Oklahoma, Cherokee Nation, the Muscogee (Creek) Nation of Oklahoma, Alabama-Coushatta Tribe of Texas, Alabama-Quassarte Tribal Town, Kialegee Tribal Town, Thlopthlocco Tribal Town, The Chickasaw Nation, Choctaw Nation of Oklahoma, Jena Band of Choctaw Indians, Shawnee Tribe, Eastern Shawnee Tribe of Oklahoma, Absentee Shawnee Tribe of Oklahoma, and the Seminole Tribe of Florida. TVA has determined that the project would have no adverse effect on historic properties listed in or eligible for the NRHP. The Georgia State Historic Preservation Officer concurred with this determination in a letter dated June 23, 2008 (Attachment B).

Socioeconomics

The proposed substation and TL would be located in Towns County, Georgia. Based on U.S. Census Bureau estimates for 2007, Towns County has a population of 10,894, a 16.9 percent increase since the 2000 Census of Population. This growth rate is slightly higher than the state rate of 16.6 percent and well above the national increase of 7.2 percent. The minority population in Towns County was 1.7 percent of the total in 2000, well below the state average of 37.4 percent and the national average of 30.9 percent. Estimated 2005 poverty levels in Towns County, at 12.1 percent, were lower than the state, 14.5 percent, and the nation, 13.3 percent. Unemployment was low in Towns County in 2007, at 3.5 percent compared to 4.4 percent statewide and 4.6 percent nationally. Per capita personal income in Towns County in 2006 was $28,819, 89.8 percent of the state average of $32,095, and 78.5 percent of the national average of $36,714. Total employment in Towns County in 2006 was 6,033. Compared to the state, employment was relatively high in Construction (13.7 percent versus 6.7 statewide); Real Estate, Rental, and Leasing (7.7 percent versus 4.5 statewide); Arts, Entertainment, and Recreation (3.0 percent versus 1.5 statewide); and Accommodation and Food Services (12.2 percent versus 6.8 statewide). Attachment H includes a summary of the methodology used by TVA with respect to our socioeconomics analysis.

Under the No Action Alternative, the proposed substation and related TL would not be built, and therefore, there would be no impacts from construction or operation of the substation. However, if similar facilities were not constructed elsewhere in the area, outages due to an insufficient supply of electricity would begin to occur at increasing frequencies.

Under the Action Alternative, construction of the proposed substation and related TL would have a small temporary positive impact on employment and income in the county. Once these facilities are completed, the local area would continue to have a reliable and adequate supply of electricity for some time, allowing the economy to continue to grow.

There are no known concentrations of disadvantaged populations in the area around the proposed substation and TL. The minority population share in the area is 2.4 percent, similar to the county rate of 1.7, and is not concentrated. The poverty level, according to the 2000 Census of Population, is 12.6 percent in Block Group 3, Census Tract 9603, where the proposed substation would be located, compared to 11.8 percent in the county (estimates for 2005 are not available for Towns County).

No significant impact on property values would be likely, although a temporary, short-term impact could occur until the public becomes accustomed to the presence of the substation and TL. Vegetative screening and lighting requirements, as discussed in the subsection on Visual Resources, would contribute to avoiding any significant impact to property values. In addition, the location of the substation in a commercial area would avoid intruding directly on residential areas, decreasing any likelihood of impacts on property values.

As discussed in the subsection on Electric and Magnetic Fields (EMFs), the proposed project would have no significant impact on human health or costs of health care because the EMF levels are very low compared to background levels and to common devices found in most homes and businesses.

Electric and Magnetic Fields

EMFs are produced by the use of electricity. Magnetic fields are produced by the flow of current in a wire or cable; whereas, electric fields are produced by voltage or the electrical "pressure" that drives the current. EMFs decrease rapidly with distance from the source. EMF levels expected from a higher voltage line than the proposed 69-kV line and EMF levels found in the home and workplace are provided in Table 1.

Table 1. Comparison of Electric and Magnetic Field Levels Found in the Home and Workplace

Device	Median EMF Level at 6 Inches From Device	Median EMF Level at 1 Foot From Device
Hair Dryers	300 mG	1 mG
Electric Razors	100 mG	20 mG
Can Openers	600 mG	150 mG
Vacuum Cleaners	300 mG	60 mG
Pencil Sharpeners	200 mG	70 mG
Computer with Color Monitor	14 mG	5 mG
115-kV TL	30 mG under the line	6.5 mG at edge of right-of-way

mG = Milligauss (one thousandth of one Gauss); Gauss is a unit used for measuring magnetic fields.

EMF levels produced from a 115-kV TL are much less than those produced from operating common household and office equipment.

Currently, no federal or State of Georgia standards exist for maximum EMF strengths for TLs. However, two states (Florida and New York) do have such regulations for TLs operating at 230 kV and above. Florida has the most restrictive, being limited to 150 milligauss (mG) at the edge of the right-of-way. By modeling the proposed 69-kV line at load capacity, BRMEMC predicts an EMF level of less than 15 mG directly under the line.

Furthermore, it predicts less than 8 mG at the edge of the right-of-way. These calculated field levels are far below the maximum levels set forth in the Florida regulations.

In general, the strongest EMFs around the outside of a substation come from the power lines entering and leaving the substation. The strength of the EMFs generated by the equipment inside the substation, such as transformers, reactors, and capacitor banks, decreases very rapidly closer to the fence. Beyond the fence, the EMFs produced by the substation equipment are typically indistinguishable from background levels.

The typical voltage for power distribution lines in the project area are from 13 to 25 kV. EMFs directly beneath these overhead distribution lines typically range from 10 to 20 mG for main feeders and less than 10 mG for lateral power lines.

Implanted medical devices historically had a potential for power equipment strong-field interference when they came within the influence of low-frequency, high-energy workplace exposure. However, the older devices and designs (i.e., those beyond five to 10 years old) have been replaced with different designs and different shielding that prevent potential for interference from external field sources up to and including the most powerful magnetic resonance imaging medical scanners. Unlike high-energy radio frequency devices that can still interfere with implanted medical devices, low-frequency and low-energy powered electric or magnetic devices no longer potentially interfere (*Journal of the American Medical Association* 2007).

Noise

Residential and recreational areas comprise the potentially affected noise environment near the proposed substation site on Parcel 52. Commercial operations across US 76 are not noise sensitive locations. Residences are sensitive environmental noise receptors, and recreational locations that have sleeping accommodations are equally as sensitive.

The nearest permanent residence is located approximately 318 feet from Site 5, and other residences are located approximately 480 and 800 feet away on the east side of Chatuge Reservoir. There is also a residence located approximately 1,800 feet across Chatuge Reservoir from Site 5. There are several recreation vehicles that are located approximately 200 to 250 feet south of the proposed substation site.

The dominant noise source in a small substation is the transformer. Transformers generate noise from the internal iron core and/or the external cooling fans. The transformer core vibrates at about 120 cycles per second, or Hertz, and creates higher harmonics. The vibrating core is attached to the transformer body and causes the entire transformer body to vibrate. This vibration generates external noise. Transformers produce a more or less continuous noise emission and do not generate sudden or peak noise. Since transformers operate continuously, the nighttime emitted noise is most important to residential receptors.

The design of the proposed substation specifies a 25 megavolt-ampere (mVA) transformer. According to the Edison Electric Institute (Miller), the sound power (L_w) emission for a standard 25 mVA transformer with a fan is 89.5 decibels, A-weighted (dBA). A dBA is a standard unit of noise weighted for the response of the human ear. Transformers are also manufactured in “quiet” models that reduce sound by at least 10 dBA compared to a standard transformer.

The potential noise impact at a sensitive receptor comes from the emitted noise at the source propagating over the distance to the receptor less the attenuation factors in path between the two. Noise propagates in all directions from a source so the noise level decreases in inverse proportion to the square of the distance between the source and receptor.

Assuming that distance is the only attenuating factor between the proposed substation and the sensitive receptors, the following noise levels are expected at the nearest residence and at the recreation vehicle community. The values found in Table 2 were calculated using the divergence method found in the *Handbook of Acoustic Measurement and Noise Control* (Harris).

Table 2. Calculated Noise Levels of the Proposed Substation on Nearby Recreational Vehicles and Residential Areas

Location	Standard 25 mVA Transformer	Quiet 25 mVA Transformer
Nearest residential structure (318 feet from Site 5)	39.5 dBA	29.5 dBA
Recreational vehicle community (200 feet from Site 5)	43.5 dBA	33.5 dBA

mVA = megavolt-ampere

dBA = decibels; a standard unit of noise weighted for the response of the human ear

Continuous intruding noise such as that from a transformer is evaluated using the day-night equivalent sound level (L_{DN}) calculated at the sensitive receptors' locations (U.S. Environmental Protection Agency). The L_{DN} adds 10 dBA to nine hours at night (10 p.m. to 7 a.m.) to account for the increased sensitivity during sleeping hours. An intruding noise level above 55 dBA L_{DN} can impact residents. When facilities are designed and built, care is taken not to exceed the 55 dBA L_{DN} threshold. The following L_{DN}'s were calculated at the nearest residence and at the recreational vehicle community.

Table 3. Calculated Day-Night Equivalent Sound Levels of the Proposed Substation on Nearby Recreational Vehicles and Residential Areas

Location	Standard 25 mVA Transformer	Quiet 25 mVA Transformer
Nearest residential structure (318 feet from Site 5)	46 dBA	36 dBA
Recreational vehicle community (200 feet from Site 5)	50 dBA	40 dBA

mVA = megavolt-ampere

dBA = decibels; a standard unit of noise weighted for the response of the human ear

The highest L_{DN} would be at the recreational vehicle community if a standard transformer were installed at the proposed substation. This L_{DN} level is significantly lower than the 55 L_{DN} thresholds. Therefore, the predicted intruding noise level using a standard transformer would not cause a significant environmental noise impact at the nearest sensitive receptors.

Cumulative Impacts

Under the Action Alternative, TVA would sell at a Section 31 public auction approximately 1.4 acres of land for construction of a substation. TVA would also grant the successful bidder a 0.2-acre permanent easement for the construction of a new TL and Section 26a approval for the placement of fill material within the floodplain. TVA has determined that there would be insignificant cumulative impacts associated with the selling of the requested land and granting a permanent easement and Section 26a approval.

TVA also considered the potential cumulative impacts of the upgraded TL in its entirety. The TVA Natural Heritage database indicated that no wetlands, endangered or threatened species, or species of conservation concern would be impacted by the TL upgrade. Because the upgraded TL would be located within either the existing BRMEMC or highway rights-of-way, there would be no or insignificant cumulative impacts to floodplains, recreation, prime farmland, terrestrial ecology, aquatic ecology, water quality, socioeconomics, and navigation. The potential for eligible archaeological sites to be present within the rights-of-way is low due to previous disturbance. In sections where the TL deviates from the highway right-of-way, the potential to affect archaeological sites would increase.

The upgraded TL would be constructed along US 76. The land use along this corridor is 40 percent commercial. The upgraded TL would be adjacent to TVA lands under permanent public recreation easements to Georgia Mountain Fair and Towns County. The recreation areas include Towns County Park and Campground, the Georgia Mountain Fairgrounds, and the Towns County Recreation Center. Other land uses along US 76 include TVA lands under permanent easement for a wastewater treatment plant and a water treatment plant. The proposed 69-kV TL would be constructed above the existing 25-kV line and within the existing right-of-way; therefore, no significant impacts to land use along this corridor are expected.

The upgraded TL would consist of new metal poles taller than existing wooden poles seen in the landscape now. There would be a noticeable change in the landscape due to the increased pole heights and the contrast of materials. However, the new poles would not be an increase in the number of contrasting elements seen in the landscape. The new poles would likely be more visible from greater distances, particularly in the middleground (0.5 mile to 4 miles). This would contribute to a reduction of scenic integrity. Visual impacts from construction would be temporary. However, these impacts would not likely be adverse to historic structures since the current visual setting for these structures include the existing TL and associated structures.

Commitments

The following commitments would be listed in the warranty deed, easement instrument, and/or Section 26a permit.

<u>Development Commitments</u>

The following development commitments would be required of the successful bidder for the development on the approximately 1.4-acre portion of Parcel 52. TVA evaluated the proposal to auction this portion of Parcel 52 based on the premise that the property would be developed for electrical substation purposes.

- The use of the property is limited to one use—electrical power substation only. TVA has the right to reenter and take possession of the property if it is used for any other purpose.

- TVA has the right to buy back the property at cost plus an annual inflation rate if the successful bidder wishes to sell the property.

- Grantee will be required to invest no less than $2,000,000 in the property in support of electrical power substation use within one year.

Environmental Commitments

In addition to inclusion in the warranty deed, easement instrument, and/or Section 26a permit, the following environmental commitments would be entered into TVA's electronic database and tracking system used to record NEPA reviews. This database tracks commitments and mitigation measures identified in EAs and EISs. Under the Action Alternative, TVA would require the successful bidder to comply with all applicable federal, state, and local regulations. In addition to the use of construction-related BMPs, permit conditions and mitigation measures would be required. The general and standard Section 26a permit conditions are located in Attachment I. The following nonroutine measures would reduce the potential for adverse environmental effects. The measures, at a minimum, would be listed as additional conditions in the Section 26a permit.

- The applicant will comply with applicable requirements for the control of oil and hazardous substance spills and install secondary containment surrounding the substation.

- A vegetative screen of mixed evergreen and deciduous shrub species would be planted at a 25-foot-minimum width around all sides of the substation. Shrubs would be 4.5 to 5 feet tall when planted and would have a mature height of 10 to 12 feet. The shrubs would be planted with a maximum spacing of 5 feet between each shrub. The vegetative screen must have a 100 percent survival rate for one year. The shrubs would not be planted within 20 feet of the proposed substation gates.

- An 8-foot-high chain link fence with dark green vinyl slats would be constructed around the substation.

- All substation, new transmission line, and associated construction lights would be fully shielded or have internal low-glare optics, such that no light would be emitted from the fixture at angles above the horizontal plane.

- Best management practices (Muncy 1999) for revegetation of disturbed lands would be implemented in the areas surrounding the fill to prevent the spread of invasive plant species.

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Attachments

Attachment A – Application, Proposed Drawings, Maps, and Needs Analysis

Attachment B – Public Scoping Comments and TVA Responses, Public Scoping Notice, and Correspondence

Attachment C – Public Comments Pertaining to BRMEMC Received During the Mountain Reservoirs Land Management Plan Comment Period (August 15-September 29, 2008)

Attachment D – TVA Notice to Hold Open House on November 13, 2008, and Public Comments With TVA Responses on the Draft Environmental Assessment

Attachment E – Georgia State Clearinghouse Memorandum and Georgia Department of Natural Resources Memorandum

Attachment F – BRMEMC Alternative Substation Locations and Transmission Routes

Attachment G – Towns County Homeowners Association Alternative Substation Locations

Attachment H – TVA Analytical Methodologies

Attachment I – TVA General and Standard Conditions

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